IN THE CLAIMS

Please amend the claims as follows:

Claim 1 (Currently Amended) In a surface configuration measuring method using, as testing optics, stereoscopic lattice type of moiré optics including a light source and a lattice pattern for producing moiré fringes and a light-sensitive device including a lens and a camera for picking up said moiré fringes,

moiré fringes of a particular fringe order are shifted by a preselected phase while a measurement range of said testing optics is limited to a vicinity of said particular fringe order, thereby generating at least three moiré image data shifted in phase, and

the at least three moiré image data are arithmetically processed to thereby ~~tridimensionally~~ three-dimensionally measure a surface configuration of a ~~work~~ work piece.

Claim 2 (Currently Amended) The method as claimed in claim 1, wherein a range of the ~~work~~ work piece to be tested by said testing optics is divided into a plurality of zones, and

a relative position between said testing optics and the ~~work~~ work piece is sequentially shifted in a direction of division of said range to thereby measure the surface configuration zone by zone.

Claim 3 (Original) The method as claimed in claim 2, wherein a distance between said light source and said light-sensitive device is varied for thereby shifting the moiré fringes of the particular fringe order by the preselected phase.

Claim 4 (Currently Amended) The method as claimed in claim 2, wherein a position of the ~~work~~ work piece is varied in a direction of an optical axis of said camera for thereby shifting the moiré fringes of the particular fringe order by the preselected phase.

Claim 5 (Original) The method as claimed in claim 2, wherein a position of said lattice pattern is varied on an optical axis of said camera for thereby shifting the moiré fringes of the particular fringe order by the preselected phase.

Claim 6 (Currently Amended) The method as claimed in claim 2, wherein said camera outputs the at least three moiré image data by picking up the ~~work~~ work piece over a single measurement range only one time.

Claim 7 (Original) The method as claimed in claim 2, wherein said light-sensitive device comprises a single or three or more line sensors.

Claim 8 (Original) The method as claimed in claim 2, wherein said light-sensitive device comprises an area sensor camera, and

an equation particular to a phase shifting method is applied to data output from a single or three or more rows of said area sensor camera to thereby measure the surface configuration.

Claim 9 (Original) The method as claimed in claim 2, wherein said lattice pattern comprises a liquid crystal device.

Claim 10 (Original) The method as claimed in claim 1, wherein a distance between said light source and said light-sensitive device is varied for thereby shifting the moiré fringes of the particular fringe order by the preselected phase.

Claim 11 (Currently Amended) The method as claimed in claim 1, wherein a position of the ~~work~~ work piece is varied in a direction of an optical axis of said camera for thereby shifting the moiré fringes of the particular fringe order by the preselected phase.

Claim 12 (Original) The method as claimed in claim 1, wherein a position of said lattice pattern is varied on an optical axis of said camera for thereby shifting the moiré fringes of the particular fringe order by the preselected phase.

Claim 13 (Currently Amended) The method as claimed in claim 1, wherein said camera outputs the at least three moiré image data by picking up the ~~work~~ work piece over a single measurement range only one time.

Claim 14 (Original) The method as claimed in claim 1, wherein said light-sensitive device comprises a single or three or more line sensors.

Claim 15 (Original) The method as claimed in claim 1, wherein said light-sensitive device comprises an area sensor camera, and

an equation particular to a phase shifting method is applied to data output from a single or three or more rows of said area sensor camera to thereby measure the surface configuration.

Claim 16 (Original) The method as claimed in claim 1, wherein said lattice pattern comprises a liquid crystal device.

Claim 17 (Currently Amended) In a surface configuration measuring method using, as testing optics, stereoscopic lattice type of moiré optics including a light source and a lattice pattern for producing moiré fringes, a light-sensitive device including a lens and a pixel array for picking up said moiré fringes, and a moving mechanism for moving said lattice pattern back and forth in a direction of an optical axis of said light-sensitive device,

said moving mechanism moves said lattice pattern back and forth for thereby shifting moiré fringes of a particular fringe order by a preselected phase,

at least three lines of moiré image data shifted in phase are generated by a one-line scanning time of said light-sensitive device and a reciprocal movement of said lattice pattern synchronous to each other, and

the at least three lines of moiré image data are arithmetically processed for thereby ~~tridimensionally~~ three-dimensionally measuring a surface configuration of a ~~work~~ work piece.

Claim 18 (Currently Amended) The method as claimed in claim 17, wherein a range of the ~~work~~ work piece to be tested by said testing optics is divided into a plurality of zones, and

a relative position between said testing optics and the ~~work~~ work piece is sequentially varied in a direction perpendicular to a direction of division of said range and in said direction of division of said range, thereby measuring the surface configuration of the ~~work~~ work piece zone by zone.

Claim 19 (Original) The method as claimed in claim 18, wherein said light-sensitive device comprises a single or three or more line sensors.

Claim 20 (Original) The method as claimed in claim 18, wherein said light-sensitive device comprises an area sensor camera, and

an equation particular to a phase shifting method is applied to data output from a single or three or more rows of said area sensor camera to thereby measure the surface configuration.

Claim 21 (Original) The method as claimed in claim 18, wherein said lattice pattern comprises a liquid crystal device.

Claim 22 (Original) The method as claimed in claim 17, wherein said light-sensitive device comprises a single or three or more line sensors.

Claim 23 (Original) The method as claimed in claim 17, wherein said light-sensitive device comprises an area sensor camera, and

an equation particular to a phase shifting method is applied to data output from a single or three or more rows of said area sensor camera to thereby measure the surface configuration.

Claim 24 (Original) The method as claimed in claim 17, wherein said lattice pattern comprises a liquid crystal device.

Claim 25 (Currently Amended) In a surface configuration measuring method using, as testing optics, stereoscopic lattice type of moiré optics including a light source and a stepped lattice pattern for producing moiré fringes, said stepped lattice pattern having at least three lattice surfaces different in height in a direction of an optical axis, a light-sensitive device

including a lens and a pixel array for picking up said moiré fringes, and a moving mechanism for moving said stepped lattice pattern back and forth in a direction perpendicular to a direction of said optical axis of said light-sensitive device,

said moving mechanism moves said stepped lattice pattern back and forth to thereby position said lattice patterns of said lattice surfaces on the optical axis one by one, thereby shifting moiré fringes of a particular fringe order by a preselected phase,

at least three lines of moiré image data shifted in phase are generated by a one-line scanning time of said light-sensitive device and a reciprocal movement of said stepped lattice pattern synchronous to each other, and

the at least three lines of moiré image data are arithmetically processed for thereby ~~tridimensionally~~ three-dimensionally measuring a surface configuration of a ~~work~~ work piece.

Claim 26 (Currently Amended) The method as claimed in claim 25, wherein a range of the ~~work~~ work piece to be tested by said testing optics is divided into a plurality of zones, and

a relative position between said testing optics and the ~~work~~ work piece is sequentially varied in a direction perpendicular to a direction of division of said range and in said direction of division of said range, thereby measuring the surface configuration of the ~~work~~ work piece zone by zone.

Claim 27 (Original) The method as claimed in claim 26, wherein said light-sensitive device comprises a single or three or more line sensors.

Claim 28 (Original) The method as claimed in claim 26, wherein said light-sensitive device comprises an area sensor camera, and

an equation particular to a phase shifting method is applied to data output from a single or three or more rows of said area sensor camera to thereby measure the surface configuration.

Claim 29 (Original) The method as claimed in claim 26, wherein said lattice pattern comprises a liquid crystal device.

Claim 30 (Original) The method as claimed in claim 25, wherein said light-sensitive device comprises a single or three or more line sensors.

Claim 31 (Original) The method as claimed in claim 25, wherein said light-sensitive device comprises an area sensor camera, and

an equation particular to a phase shifting method is applied to data output from a single or three or more rows of said area sensor camera to thereby measure the surface configuration.

Claim 32 (Original) The method as claimed in claim 25, wherein said lattice pattern comprises a liquid crystal device.

Claim 33 (Currently Amended) In a surface configuration measuring method using, as testing optics, stereoscopic lattice type of moiré optics including a light source and a lattice pattern for producing moiré fringes, a light-sensitive device including a lens and a color sensor camera for picking up said moiré fringes, a moving mechanism for moving said lattice

pattern back and forth in a direction of an optical axis of said line sensor camera, color filters of different colors positioned between a ~~work~~ work piece and said color sensor camera, and a switching mechanism for positioning one of said color filters on said optical axis,

said moving mechanism moves said lattice pattern back and forth to thereby shift fringe patterns of a particular fringe order by a preselected phase,

three moiré image data of different colors shifted in phase are generated by a one-line or one-frame scanning time of said color sensor camera and an operation of said switching mechanism synchronous to each other, and

the three moiré image data of different colors are arithmetically processed for thereby ~~tridimensionally~~ three-dimensionally measuring a surface configuration of a ~~work~~ work piece.

Claim 34 (Currently Amended) The method as claimed in claim 33, wherein a range of the ~~work~~ work piece to be tested by said testing optics is divided into a plurality of zones, and

a relative position between said testing optics and the ~~work~~ work piece is sequentially varied in a direction perpendicular to a direction of division of said range and in said direction of division of said range, thereby measuring the surface configuration of the ~~work~~ work piece zone by zone.

Claim 35 (Original) The method as claimed in claim 34, wherein said light-sensitive device comprises a single or three or more line sensors.

Claim 36 (Original) The method as claimed in claim 34, wherein said light-sensitive device comprises an area sensor camera, and

an equation particular to a phase shifting method is applied to data output from a single or three or more rows of said area sensor camera to thereby measure the surface configuration.

Claim 37 (Original) The method as claimed in claim 34, wherein said lattice pattern comprises a liquid crystal device.

Claim 38 (Original) The method as claimed in claim 33, wherein said light-sensitive device comprises a single or three or more line sensors.

Claim 39 (Original) The method as claimed in claim 33, wherein said light-sensitive device comprises an area sensor camera, and

an equation particular to a phase shifting method is applied to data output from a single or three or more rows of said area sensor camera to thereby measure the surface configuration.

Claim 40 (Original) The method as claimed in claim 33, wherein said lattice pattern comprises a liquid crystal device.

Claim 41 (Currently Amended) In a surface configuration measuring method using, as testing optics, stereoscopic lattice type of moiré optics including a light source and a stepped lattice pattern for producing moiré fringes, said stepped lattice pattern having three stepped lattice surfaces different in height in a direction of an optical axis, a light-sensitive device including a lens and a color sensor camera for picking up said moiré fringes, a moving mechanism for moving said stepped lattice pattern back and forth in a direction perpendicular

to a direction of said optical axis of said line sensor camera, color filters of different colors positioned between a ~~work~~ work piece and said color sensor camera, and a switching mechanism for positioning one of said color filters on said optical axis,

said moving mechanism moves said lattice pattern back and forth to thereby sequentially position lattice patterns of said lattice surfaces on the optical axis one by one, thereby shifting fringe patterns of a particular fringe order by a preselected phase,

three moiré image data of different colors shifted in phase are generated by a one-line or one-frame scanning time of said color sensor camera and an operation of said switching mechanism synchronous to each other, and

the three moiré image data of different colors are arithmetically processed for thereby ~~tridimensionally~~ three-dimensionally measuring a surface configuration of a ~~work~~ work piece.

Claim 42 (Currently Amended) The method as claimed in claim 41, wherein a range of the ~~work~~ work piece to be tested by said testing optics is divided into a plurality of zones, and

a relative position between said testing optics and the ~~work~~ work piece is sequentially varied in a direction perpendicular to a direction of division of said range and in said direction of division of said range, thereby measuring the surface configuration of the ~~work~~ work piece zone by zone.

Claim 43 (Original) The method as claimed in claim 42, wherein said light-sensitive device comprises a single or three or more line sensors.

Claim 44 (Original) The method as claimed in claim 42, wherein said light-sensitive device comprises an area sensor camera, and

an equation particular to a phase shifting method is applied to data output from a single or three or more rows of said area sensor camera to thereby measure the surface configuration.

Claim 45 (Original) The method as claimed in claim 42, wherein said lattice pattern comprises a liquid crystal device.

Claim 46 (Original) The method as claimed in claim 41, wherein said light-sensitive device comprises a single or three or more line sensors.

Claim 47 (Original) The method as claimed in claim 41, wherein said light-sensitive device comprises an area sensor camera, and

an equation particular to a phase shifting method is applied to data output from a single or three or more rows of said area sensor camera to thereby measure the surface configuration.

Claim 48 (Original) The method as claimed in claim 41, wherein said lattice pattern comprises a liquid crystal device.

Claim 49 (Currently Amended) In a surface configuration measuring method using, as testing optics, stereoscopic lattice type of moiré optics including a light source and a lattice pattern with a variable lattice pitch for producing moiré fringes, and a light-sensitive device including a lens and a pixel array for picking up said moiré fringes,

a lattice pitch of said lattice pattern is varied to thereby shift moiré fringes of a particular fringe order by a preselected phase,

at least three lines of moiré image data shifted in phase are generated by a one-line scanning time of said light-sensitive device and variation of the lattice pitch of said lattice pattern synchronous to each other, and

the at least three lines of moiré image data are arithmetically processed for thereby ~~tridimensionally~~ three-dimensionally measuring a surface configuration of a ~~work~~ work piece.

Claim 50 (Currently Amended) The method as claimed in claim 49, wherein a range of the ~~work~~ work piece to be tested by said testing optics is divided into a plurality of zones, and

a relative position between said testing optics and the ~~work~~ work piece is sequentially varied in a direction perpendicular to a direction of division of said range and in said direction of division of said range, thereby measuring the surface configuration of the ~~work~~ work piece zone by zone.

Claim 51 (Original) The method as claimed in claim 50, wherein said light-sensitive device comprises a single or three or more line sensors.

Claim 52 (Original) The method as claimed in claim 50, wherein said light-sensitive device comprises an area sensor camera, and

an equation particular to a phase shifting method is applied to data output from a single or three or more rows of said area sensor camera to thereby measure the surface configuration.

Claim 53 (Original) The method as claimed in claim 50, wherein said lattice pattern comprises a liquid crystal device.

Claim 54 (Original) The method as claimed in claim 49, wherein said light-sensitive device comprises a single or three or more line sensors.

Claim 55 (Original) The method as claimed in claim 49, wherein said light-sensitive device comprises an area sensor camera, and

an equation particular to a phase shifting method is applied to data output from a single or three or more rows of said area sensor camera to thereby measure the surface configuration.

Claim 56 (Original) The method as claimed in claim 49, wherein said lattice pattern comprises a liquid crystal device.

Claim 57 (Currently Amended) In a surface configuration measuring method using, as testing optics, stereoscopic lattice type of moiré optics including a light source and a stepped lattice pattern for producing moiré fringes, said stepped lattice pattern having at least three lattice surfaces different in height in a direction of an optical axis, and a light-sensitive device including a lens and pixels arranged at least in three lines for picking up said moiré fringes,

said pixels on each line pick up a moiré image via a particular one of said lattice surfaces for thereby shifting fringe patterns of a particular fringe order by a preselected phase,

at least three lines of moiré image data shifted in phase are generated by scanning times of said pixels on said lines synchronous to each other, and

the at least three lines of moiré image data are arithmetically processed for thereby ~~tridimensionally~~ three-dimensionally measuring a surface configuration of a ~~work~~ work piece.

Claim 58 (Currently Amended) The method as claimed in claim 57, wherein a range of the ~~work~~ work piece to be tested by said testing optics is divided into a plurality of zones, and

a relative position between said testing optics and the ~~work~~ work piece is sequentially varied in a direction perpendicular to a direction of division of said range and in said direction of division of said range, thereby measuring the surface configuration of the ~~work~~ work piece zone by zone.

Claim 59 (Original) The method as claimed in claim 58, wherein said light-sensitive device comprises a single or three or more line sensors.

Claim 60 (Original) The method as claimed in claim 58, wherein said light-sensitive device comprises an area sensor camera, and

an equation particular to a phase shifting method is applied to data output from a single or three or more rows of said area sensor camera to thereby measure the surface configuration.

Claim 61 (Original) The method as claimed in claim 55, wherein said lattice pattern comprises a liquid crystal device.

Claim 62 (Original) The method as claimed in claim 57, wherein said light-sensitive device comprises a single or three or more line sensors.

Claim 63 (Original) The method as claimed in claim 57, wherein said light-sensitive device comprises an area sensor camera, and

an equation particular to a phase shifting method is applied to data output from a single or three or more rows of said area sensor camera to thereby measure the surface configuration.

Claim 64 (Original) The method as claimed in claim 57, wherein said lattice pattern comprises a liquid crystal device.

Claim 65 (Currently Amended) A surface configuration measuring apparatus using, as testing optics, stereoscopic lattice type of moiré optics including a light source and a lattice pattern for producing moiré fringes and a light-sensitive device including a lens and a camera for picking up said moiré fringes, said surface configuration measuring apparatus comprising:

a phase shifting mechanism for shifting moiré fringes of a particular fringe order by a preselected phase, said camera having a measurement range limited to a vicinity of said particular fringe order; and

data processing means for executing an arithmetic operation with at least three moiré image data shifted in phase by said phase shifting mechanism and output from said camera to thereby ~~tridimensionally~~ three-dimensionally measure a surface configuration of a ~~work~~ work piece.

Claim 66 (Currently Amended) The apparatus as claimed in claim 65, wherein a range of the ~~work~~ work piece to be tested by said testing optics is divided into a plurality of zones, said apparatus further comprising a division-direction moving mechanism for sequentially moving a relative position between said testing optics and the ~~work~~ work piece in a direction of division of said range.

Claim 67 (Original) The apparatus as claimed in claim 66, further comprising a distance varying mechanism for varying a distance between said light source and said light-sensitive device.

Claim 68 (Currently Amended) The apparatus as claimed in claim 66, wherein said phase shifting mechanism varies a position of the ~~work~~ work piece in a direction of an optical axis of said camera.

Claim 69 (Original) The apparatus as claimed in claim 66, wherein said phase shifting mechanism comprises a lattice pattern shifting mechanism for shifting a position of said lattice pattern on an optical axis of said camera.

Claim 70 (Currently Amended) The apparatus as claimed in claim 66, wherein the ~~work~~ work piece is cylindrical

Claim 71 (Currently Amended) The apparatus as claimed in claim 66, wherein the ~~work~~ work piece is flat.

Claim 72 (Original) The apparatus as claimed in claim 66, wherein said light-sensitive device comprises a single or three or more line sensors.

Claim 73 (Original) The apparatus as claimed in claim 66, wherein said camera comprises an area sensor camera, and

calculation particular to a phase shifting method is applied to data output from a single or three or more rows of said area sensor camera for thereby measuring the surface configuration.

Claim 74 (Original) The apparatus as claimed in claim 66, wherein said lattice pattern comprises a liquid crystal device.

Claim 75 (Original) The apparatus as claimed in claim 65, further comprising a distance varying mechanism for varying a distance between said light source and said light-sensitive device.

Claim 76 (Currently Amended) The apparatus as claimed in claim 65, wherein said phase shifting mechanism varies a position of the ~~work~~ work piece in a direction of an optical axis of said camera.

Claim 77 (Original) The apparatus as claimed in claim 65, wherein said phase shifting mechanism comprises a lattice pattern shifting mechanism for shifting a position of said lattice pattern on an optical axis of said camera.

Claim 78 (Currently Amended) The apparatus as claimed in claim 65, wherein the ~~work~~ work piece is cylindrical

Claim 79 (Currently Amended) The apparatus as claimed in claim 65, wherein the ~~work~~ work piece is flat.

Claim 80 (Original) The apparatus as claimed in claim 65, wherein said light-sensitive device comprises a single or three or more line sensors.

Claim 81 (Original) The apparatus as claimed in claim 65, wherein said camera comprises an area sensor camera, and

calculation particular to a phase shifting method is applied to data output from a single or three or more rows of said area sensor camera for thereby measuring the surface configuration.

Claim 82 (Original) The apparatus as claimed in claim 65, wherein said lattice pattern comprises a liquid crystal device.

Claim 83 (Currently Amended) A surface configuration measuring apparatus using, as testing optics, stereoscopic lattice type of moiré optics including a light source and a lattice pattern for producing moiré fringes and a light-sensitive device including a lens and a camera for picking up said moiré fringes, said camera comprising a pixel array, said surface configuration measuring apparatus comprising:

a moving mechanism for moving said lattice pattern back and forth in a direction of an optical axis of said light-sensitive device for thereby shifting moiré fringes of a particular order by a preselected phase;

synchronizing means for synchronizing a one-line scanning time of said light-sensitive device and a reciprocal movement of said lattice pattern; and

data processing means for executing an arithmetic operation with at least three lines of moiré image data shifted in phase, which are produced by the one-line scanning time of said light-sensitive device and a reciprocal movement of said lattice pattern synchronous to each other, for thereby ~~tridimensionally~~ three-dimensionally measuring a surface configuration of a ~~work~~ work piece.

Claim 84 (Currently Amended) The apparatus as claimed in claim 83, wherein a range of the ~~work~~ work piece to be tested by said testing optics is divided into a plurality of zones, said apparatus further comprising:

an in-zone moving mechanism for sequentially moving a relative position between said testing optics and the ~~work~~ work piece in a direction perpendicular to a direction of division of said range; and

a division-direction moving mechanism for sequentially moving the relative position in the direction of division of said range.

Claim 85 (Currently Amended) The apparatus as claimed in claim 84, wherein the ~~work~~ work piece is cylindrical

Claim 86 (Currently Amended) The apparatus as claimed in claim 84, wherein the ~~work~~ work piece is flat.

Claim 87 (Original) The apparatus as claimed in claim 84, wherein said light-sensitive device comprises a single or three or more line sensors.

Claim 88 (Original) The apparatus as claimed in claim 84, wherein said camera comprises an area sensor camera, and

calculation particular to a phase shifting method is applied to data output from a single or three or more rows of said area sensor camera for thereby measuring the surface configuration.

Claim 89 (Original) The apparatus as claimed in claim 84, wherein said lattice pattern comprises a liquid crystal device.

Claim 90 (Currently Amended) The apparatus as claimed in claim 83, wherein the ~~work~~ work piece is cylindrical

Claim 91 (Currently Amended) The apparatus as claimed in claim 83, wherein the ~~work~~ work piece is flat.

Claim 92 (Original) The apparatus as claimed in claim 83, wherein said light-sensitive device comprises a single or three or more line sensors.

Claim 93 (Original) The apparatus as claimed in claim 83, wherein said camera comprises an area sensor camera, and

calculation particular to a phase shifting method is applied to data output from a single or three or more rows of said area sensor camera for thereby measuring the surface configuration.

Claim 94 (Original) The apparatus as claimed in claim 83, wherein said lattice pattern comprises a liquid crystal device.

Claim 95 (Currently Amended) A surface configuration measuring apparatus using, as testing optics, stereoscopic lattice type of moiré optics including a light source and a lattice pattern for producing moiré fringes and a light-sensitive device including a lens and a camera for picking up said moiré fringes, said camera comprising a pixel array, said lattice pattern comprising a stepped lattice pattern having at least three lattice surfaces, which are different in height in a direction of an optical axis, for shifting moiré fringes of a particular fringe order by a preselected phase, said surface configuration measuring apparatus comprising:

a moving mechanism for moving said stepped lattice pattern back and forth in a direction perpendicular to a direction of the optical axis of said light-sensitive device for thereby sequentially positioning said lattice surfaces on said optical axis;

synchronizing means for synchronizing a one-line scanning time of said light-sensitive device and a reciprocal movement of said stepped lattice pattern; and

data processing means for executing an arithmetic operation with at least three lines of moiré image data shifted in phase, which are produced by the one-line scanning time of said light-sensitive device and a reciprocal movement of said stepped lattice pattern synchronous to each other, for thereby ~~tridimensionally~~ three-dimensionally measuring a surface configuration of a ~~work~~ work piece.

Claim 96 (Currently Amended) The apparatus as claimed in claim 95, wherein a range of the ~~work~~ work piece to be tested by said testing optics is divided into a plurality of zones, said apparatus further comprising:

an in-zone moving mechanism for sequentially moving a relative position between said testing optics and the ~~work~~ work piece in a direction perpendicular to a direction of division of said range; and

a division-direction moving mechanism for sequentially moving the relative position in the direction of division of said range.

Claim 97 (Currently Amended) The apparatus as claimed in claim 96, wherein the ~~work~~ work piece is cylindrical

Claim 98 (Currently Amended) The apparatus as claimed in claim 96, wherein the ~~work~~ work piece is flat.

Claim 99 (Original) The apparatus as claimed in claim 96, wherein said light-sensitive device comprises a single or three or more line sensors.

Claim 100 (Original) The apparatus as claimed in claim 96, wherein said camera comprises an area sensor camera, and

calculation particular to a phase shifting method is applied to data output from a single or three or more rows of said area sensor camera for thereby measuring the surface configuration.

Claim 101 (Original) The apparatus as claimed in claim 96, wherein said lattice pattern comprises a liquid crystal device.

Claim 102 (Currently Amended) The apparatus as claimed in claim 95, wherein the ~~work~~ work piece is cylindrical

Claim 103 (Currently Amended) The apparatus as claimed in claim 95, wherein the ~~work~~ work piece is flat.

Claim 104 (Original) The apparatus as claimed in claim 95, wherein said light-sensitive device comprises a single or three or more line sensors.

Claim 105 (Original) The apparatus as claimed in claim 95, wherein said camera comprises an area sensor camera, and

calculation particular to a phase shifting method is applied to data output from a single or three or more rows of said area sensor camera for thereby measuring the surface configuration.

Claim 106 (Original) The apparatus as claimed in claim 95, wherein said lattice pattern comprises a liquid crystal device.

Claim 107 (Currently Amended) A surface configuration measuring apparatus using, as testing optics, stereoscopic lattice type of moiré optics including a light source and a lattice pattern for producing moiré fringes and a light-sensitive device including a lens and a camera

for picking up said moiré fringes, said camera comprising a color sensor camera, said surface configuration measuring apparatus comprising:

a moving mechanism for moving said lattice pattern back and forth in a direction of an optical axis of said color sensor camera for thereby shifting moiré fringes of a particular fringe order by a preselected phase;

filters of different colors positioned between a ~~work~~ work piece and said color sensor camera;

a switching mechanism for selectively positioning said color filters on the optical axis of said color sensor camera;

synchronizing means for synchronizing a one-line or one-frame scanning time of said color sensor camera, a reciprocal movement of said lattice pattern and an operation of said switching mechanism; and

data processing means for executing an arithmetic operation with at three colors of moiré image data shifted in phase, which are generated by the one-line or one-frame scanning time of said color sensor camera, the reciprocal movement of said lattice pattern and the operation of said switching mechanism, for thereby ~~tridimensionally~~ three-dimensionally measuring a surface configuration of the ~~work~~ work piece.

Claim 108 (Currently Amended) The apparatus as claimed in claim 107, wherein a range of the ~~work~~ work piece to be tested by said testing optics is divided into a plurality of zones, said apparatus further comprising:

an in-zone moving mechanism for sequentially moving a relative position between said testing optics and the ~~work~~ work piece in a direction perpendicular to a direction of division of said range; and

a division-direction moving mechanism for sequentially moving the relative position in the direction of division of said range.

Claim 109 (Currently Amended) The apparatus as claimed in claim 108, wherein the ~~work~~ work piece is cylindrical

Claim 110 (Currently Amended) The apparatus as claimed in claim 108, wherein the ~~work~~ work piece is flat.

Claim 111 (Original) The apparatus as claimed in claim 108, wherein said light-sensitive device comprises a single or three or more line sensors.

Claim 112 (Original) The apparatus as claimed in claim 108, wherein said camera comprises an area sensor camera, and

calculation particular to a phase shifting method is applied to data output from a single or three or more rows of said area sensor camera for thereby measuring the surface configuration.

Claim 113 (Original) The apparatus as claimed in claim 108, wherein said lattice pattern comprises a liquid crystal device.

Claim 114 (Currently Amended) The apparatus as claimed in claim 107, wherein the ~~work~~ work piece is cylindrical

Claim 115 (Currently Amended) The apparatus as claimed in claim 107, wherein the ~~work~~ work piece is flat.

Claim 116 (Original) The apparatus as claimed in claim 107, wherein said light-sensitive device comprises a single or three or more line sensors.

Claim 117 (Original) The apparatus as claimed in claim 107, wherein said camera comprises an area sensor camera, and

calculation particular to a phase shifting method is applied to data output from a single or three or more rows of said area sensor camera for thereby measuring the surface configuration.

Claim 118 (Original) The apparatus as claimed in claim 107, wherein said lattice pattern comprises a liquid crystal device.

Claim 119 (Currently Amended) A surface configuration measuring apparatus using, as testing optics, stereoscopic lattice type of moiré optics including a light source and a lattice pattern for producing moiré fringes and a light-sensitive device including a lens and a camera for picking up said moiré fringes, said camera comprising a color sensor camera, said lattice pattern comprising a stepped lattice pattern having at least three lattice surfaces, which are different in height in a direction of an optical axis, for shifting moiré fringes of a particular fringe order by a preselected phase, said surface configuration measuring apparatus comprising:

a moving mechanism for moving said stepped lattice pattern back and forth in a direction of the optical axis of said color sensor camera for thereby sequentially positioning lattice patterns of said lattice surfaces on said optical axis;

color filters of different colors positioned between a ~~work~~ work piece and said color sensor camera;

a switching mechanism for selectively positioning said color filters on the optical axis of said color sensor camera;

synchronizing means for synchronizing a one-line or one-frame scanning time of said color sensor camera, a reciprocal movement of said stepped lattice pattern and an operation of said switching mechanism; and

data processing means for executing an arithmetic operation with three colors of moiré image data shifted in phase, which are produced by the one-line or one-frame scanning time of said color sensor camera, the reciprocal movement of said stepped pattern and the operation of said switching mechanism synchronous to each other, for thereby ~~tridimensionally~~ three-dimensionally measuring a surface configuration of the ~~work~~ work piece.

Claim 120 (Currently Amended) The apparatus as claimed in claim 119, wherein a range of the ~~work~~ work piece to be tested by said testing optics is divided into a plurality of zones, said apparatus further comprising:

an in-zone moving mechanism for sequentially moving a relative position between said testing optics and the ~~work~~ work piece in a direction perpendicular to a direction of division of said range; and

a division-direction moving mechanism for sequentially moving the relative position in the direction of division of said range.

Claim 121 (Currently Amended) The apparatus as claimed in claim 120, wherein the ~~work~~ work piece is cylindrical

Claim 122 (Currently Amended) The apparatus as claimed in claim 120, wherein the ~~work~~ work piece is flat.

Claim 123 (Original) The apparatus as claimed in claim 120, wherein said light-sensitive device comprises a single or three or more line sensors.

Claim 124 (Original) The apparatus as claimed in claim 120, wherein said camera comprises an area sensor camera, and

calculation particular to a phase shifting method is applied to data output from a single or three or more rows of said area sensor camera for thereby measuring the surface configuration.

Claim 125 (Original) The apparatus as claimed in claim 120, wherein said lattice pattern comprises a liquid crystal device.

Claim 126 (Currently Amended) The apparatus as claimed in claim 119, wherein the ~~work~~ work piece is cylindrical

Claim 127 (Currently Amended) The apparatus as claimed in claim 119, wherein the ~~work~~ work piece is flat.

Claim 128 (Original) The apparatus as claimed in claim 119, wherein said light-sensitive device comprises a single or three or more line sensors.

Claim 129 (Original) The apparatus as claimed in claim 119, wherein said camera comprises an area sensor camera, and

calculation particular to a phase shifting method is applied to data output from a single or three or more rows of said area sensor camera for thereby measuring the surface configuration.

Claim 130 (Original) The apparatus as claimed in claim 119, wherein said lattice pattern comprises a liquid crystal device.

Claim 131 (Currently Amended) A surface configuration measuring apparatus using, as testing optics, stereoscopic lattice type of moiré optics including a light source and a lattice pattern with a variable lattice pitch for producing moiré fringes, and a light-sensitive device including a lens and a camera for picking up said moiré fringes, said camera comprising a pixel array, said surface configuration measuring apparatus comprising:

synchronizing means for synchronizing a one-line scanning time of said light-sensitive device and a lattice pitch varying operation of said lattice pattern; and

data processing means for executing an arithmetic operation with at least three lines of moiré image data shifted in phase, which are generated by the one-line scanning time of said light-sensitive device and the lattice pitch varying operation synchronous to each other, for thereby measuring a surface configuration of a ~~work~~ work piece.

Claim 132 (Currently Amended) The apparatus as claimed in claim 131, wherein a range of the ~~work~~ work piece to be tested by said testing optics is divided into a plurality of zones, said apparatus further comprising:

an in-zone moving mechanism for sequentially moving a relative position between said testing optics and the ~~work~~ work piece in a direction perpendicular to a direction of division of said range; and

a division-direction moving mechanism for sequentially moving the relative position in the direction of division of said range.

Claim 133 (Currently Amended) The apparatus as claimed in claim 132, wherein the ~~work~~ work piece is cylindrical

Claim 134 (Currently Amended) The apparatus as claimed in claim 132, wherein the ~~work~~ work piece is flat.

Claim 135 (Original) The apparatus as claimed in claim 132, wherein said light-sensitive device comprises a single or three or more line sensors.

Claim 136 (Original) The apparatus as claimed in claim 132, wherein said camera comprises an area sensor camera, and

calculation particular to a phase shifting method is applied to data output from a single or three or more rows of said area sensor camera for thereby measuring the surface configuration.

Claim 137 (Original) The apparatus as claimed in claim 132, wherein said lattice pattern comprises a liquid crystal device.

Claim 138 (Currently Amended) The apparatus as claimed in claim 131, wherein the ~~work~~ work piece is cylindrical

Claim 139 (Currently Amended) The apparatus as claimed in claim 131, wherein the ~~work~~ work piece is flat.

Claim 140 (Original) The apparatus as claimed in claim 131, wherein said light-sensitive device comprises a single or three or more line sensors.

Claim 141 (Original) The apparatus as claimed in claim 131, wherein said camera comprises an area sensor camera, and

calculation particular to a phase shifting method is applied to data output from a single or three or more rows of said area sensor camera for thereby measuring the surface configuration.

Claim 142 (Original) The apparatus as claimed in claim 131, wherein said lattice pattern comprises a liquid crystal device.

Claim 143 (Currently Amended) A surface configuration measuring apparatus using, as testing optics, stereoscopic lattice type of moiré optics including a light source and a lattice pattern for producing moiré fringes, said stepped lattice pattern having at least three lattice surfaces different in height in a direction of an optical axis for shifting fringes of a particular

fringe order by a preselected phase, and a light-sensitive device including a lens and a camera for picking up said moiré fringes, said camera comprising three or more parallel lines of pixels each for picking up a ~~work~~ work piece via a particular one of said lattice surfaces to thereby output a moiré image shifted in phase from said fringes of said particular fringe order by said preselected phase, said surface configuration measuring apparatus comprising:

a mechanism for shifting a relative position between said moiré optics and a surface of the ~~work~~ work piece;

synchronizing means for synchronizing scanning times of said three lines of pixels of said camera; and

data processing means for executing an arithmetic operation with at least three lines of moiré image data shifted in phase, which are generated by an operation of said mechanism and the scanning times of said three lines of pixels synchronous to each other, for thereby ~~tridimensionally~~ three-dimensionally measure a configuration of the ~~work~~ work piece.

Claim 144 (Currently Amended) The apparatus as claimed in claim 143, wherein a range of the ~~work~~ work piece to be tested by said testing optics is divided into a plurality of zones, said apparatus further comprising:

an in-zone moving mechanism for sequentially moving a relative position between said testing optics and the ~~work~~ work piece in a direction perpendicular to a direction of division of said range; and

a division-direction moving mechanism for sequentially moving the relative position in the direction of division of said range.

Claim 145 (Currently Amended) The apparatus as claimed in claim 144, wherein the ~~work~~ work piece is cylindrical

Claim 146 (Currently Amended) The apparatus as claimed in claim 144, wherein the ~~work~~ work piece is flat.

Claim 147 (Original) The apparatus as claimed in claim 144, wherein said light-sensitive device comprises a single or three or more line sensors.

Claim 148 (Original) The apparatus as claimed in claim 144, wherein said camera comprises an area sensor camera, and

calculation particular to a phase shifting method is applied to data output from a single or three or more rows of said area sensor camera for thereby measuring the surface configuration.

Claim 149 (Original) The apparatus as claimed in claim 144, wherein said lattice pattern comprises a liquid crystal device.

Claim 150 (Currently Amended) The apparatus as claimed in claim 143, wherein the ~~work~~ work piece is cylindrical

Claim 151 (Currently Amended) The apparatus as claimed in claim 143, wherein the ~~work~~ work piece is flat.

Claim 152 (Original) The apparatus as claimed in claim 143, wherein said light-sensitive device comprises a single or three or more line sensors.

Claim 153 (Original) The apparatus as claimed in claim 143, wherein said camera comprises an area sensor camera, and

calculation particular to a phase shifting method is applied to data output from a single or three or more rows of said area sensor camera for thereby measuring the surface configuration.

Claim 154 (Original) The apparatus as claimed in claim 143, wherein said lattice pattern comprises a liquid crystal device.

Claim 155 (Currently Amended) A surface configuration measuring apparatus using, as testing optics, stereoscopic lattice type of moiré optics including a light source and a lattice pattern for producing moiré fringes, and a light-sensitive device including a lens and a camera for picking up said moiré fringes, said camera comprising at least three parallel lines of pixels, a surface of a ~~work~~ work piece being parallel to and spaced by a same distance from said at least three parallel lines of pixels at a side opposite to said camera, said lattice pattern being not inclined in a direction in which said pixels are arranged, but being inclined in a direction in which said lines are arranged, such that each line of pixels is spaced by a particular distance from said lattice pattern to thereby pick up said surface of said ~~work~~ work piece in a form of a particular moiré image shifted by a preselected phase, said surface configuration measuring apparatus comprising:

a mechanism for moving a relative position between said moiré optics and the surface of the ~~work~~ work piece in a direction in which said lattice pattern is inclined;

synchronizing means for synchronizing scanning times of said at least three lines of pixels; and

data processing means for executing an arithmetic operation with at least three lines of moiré image data shifted in phase, which are generated by an operation of said mechanism and the scanning times of said three lines of pixels synchronous to each other, for thereby ~~tridimensionally~~ three-dimensionally measure a configuration of the ~~work~~ work piece.

Claim 156 (Currently Amended) The apparatus as claimed in claim 155, wherein a range of the ~~work~~ work piece to be tested by said testing optics is divided into a plurality of zones, said apparatus further comprising:

an in-zone moving mechanism for sequentially moving a relative position between said testing optics and the ~~work~~ work piece in a direction perpendicular to direction of division of said range; and

a division-direction moving mechanism for sequentially moving the relative position in the direction of division of said range.

Claim 157 (Currently Amended) The apparatus as claimed in claim 156, wherein the ~~work~~ work piece is cylindrical

Claim 158 (Currently Amended) The apparatus as claimed in claim 156, wherein the ~~work~~ work piece is flat.

Claim 159 (Original) The apparatus as claimed in claim 156, wherein said light-sensitive device comprises a single or three or more line sensors.

Claim 160 (Original) The apparatus as claimed in claim 156, wherein said camera comprises an area sensor camera, and

calculation particular to a phase shifting method is applied to data output from a single or three or more rows of said area sensor camera for thereby measuring the surface configuration.

Claim 161 (Original) The apparatus as claimed in claim 156, wherein said lattice pattern comprises a liquid crystal device.

Claim 162 (Currently Amended) The apparatus as claimed in claim 155, wherein the ~~work~~ work piece is cylindrical

Claim 163 (Currently Amended) The apparatus as claimed in claim 155, wherein the ~~work~~ work piece is flat.

Claim 164 (Original) The apparatus as claimed in claim 155, wherein said light-sensitive device comprises a single or three or more line sensors.

Claim 165 (Original) The apparatus as claimed in claim 155, wherein said camera comprises an area sensor camera, and

calculation particular to a phase shifting method is applied to data output from a single or three or more rows of said area sensor camera for thereby measuring the surface configuration.

Claim 166 (Original) The apparatus as claimed in claim 155, wherein said lattice pattern comprises a liquid crystal device.

Claim 167 (Currently Amended) A surface configuration measuring apparatus using, as testing optics, stereoscopic lattice type of moiré optics including a light source and a lattice pattern for producing moiré fringes, and a light-sensitive device including a lens and a camera for picking up said moiré fringes, said camera comprising at least three parallel lines of pixels that are parallel to said lattice pattern, a surface of a ~~work~~ work piece, which faces said camera with the intermediary of said lattice pattern, being parallel to and spaced by a same distance from said lattice pattern, said at least three lines of pixels each picking up a particular portion of said surface of said ~~work~~ work piece as a visual field, said lattice pattern having different pitches each being assigned to a particular visual field such that each line of pixels output a moiré image shifted by a preselected phase, said surface configuration measuring apparatus comprising:

a mechanism for moving a relative position between said moiré optics and the surface of the ~~work~~ work piece in a direction in which said at least three lines of said camera are arranged;

synchronizing means for synchronizing scanning times of said at least three lines of pixels; and

data processing means for executing an arithmetic operation with at least three lines of moiré image data shifted in phase, which are generated by an operation of said mechanism and the scanning times of said three lines of pixels synchronous to each other, for thereby ~~tridimensionally~~ three-dimensionally measure a configuration of the ~~work~~ work piece.

Claim 168 (Currently Amended) The apparatus as claimed in claim 167, wherein a range of the ~~work~~ work piece to be tested by said testing optics is divided into a plurality of zones, said apparatus further comprising:

an in-zone moving mechanism for sequentially moving a relative position between said testing optics and the ~~work~~ work piece in a direction perpendicular to a direction in a direction of division of said range; and

a division-direction moving mechanism for sequentially moving the relative position in the direction of division of said range.

Claim 169 (Currently Amended) The apparatus as claimed in claim 168, wherein the ~~work~~ work piece is cylindrical

Claim 170 (Currently Amended) The apparatus as claimed in claim 168, wherein the ~~work~~ work piece is flat.

Claim 171 (Original) The apparatus as claimed in claim 168, wherein said light-sensitive device comprises a single or three or more line sensors.

Claim 172 (Original) The apparatus as claimed in claim 168, wherein said camera comprises an area sensor camera, and

calculation particular to a phase shifting method is applied to data output from a single or three or more rows of said area sensor camera for thereby measuring the surface configuration.

Claim 173 (Original) The apparatus as claimed in claim 168, wherein said lattice pattern comprises a liquid crystal device.

Claim 174 (Currently Amended) The apparatus as claimed in claim 167, wherein the ~~work~~ work piece is cylindrical

Claim 175 (Currently Amended) The apparatus as claimed in claim 167, wherein the ~~work~~ work piece is flat.

Claim 176 (Original) The apparatus as claimed in claim 167, wherein said light-sensitive device comprises a single or three or more line sensors.

Claim 177 (Original) The apparatus as claimed in claim 167, wherein said camera comprises an area sensor camera, and

calculation particular to a phase shifting method is applied to data output from a single or three or more rows of said area sensor camera for thereby measuring the surface configuration.

Claim 178 (Original) The apparatus as claimed in claim 167, wherein said lattice pattern comprises a liquid crystal device.

Claim 179 (Currently Amended) A surface configuration measuring apparatus using, as testing optics, stereoscopic lattice type of moiré optics including a light source and a lattice pattern for producing moiré fringes, and a light-sensitive device including a lens and a camera for picking up said moiré fringes, said camera comprising at least three parallel lines of pixels that are parallel to said lattice pattern, a surface of a ~~work~~ work piece being not inclined in a direction in which said pixels are arranged, but being inclined in a direction in which said lines are arranged, such that each line of pixels picks up a particular portion of

said surface of said ~~work~~ work piece spaced by a particular distance from said lattice pattern as a visual field to thereby pick up said portion in a form of a particular moiré image shifted by a preselected phase, said surface configuration measuring apparatus comprising:

a mechanism for moving a relative position between said moiré optics and the surface of the ~~work~~ work piece in a direction in which said surface is inclined;

synchronizing means for synchronizing scanning times of said at least three lines of pixels; and

data processing means for executing an arithmetic operation with at least three lines of moiré image data shifted in phase, which are generated by an operation of said mechanism and the scanning times of said three lines of pixels synchronous to each other, for thereby ~~tridimensionally~~ three-dimensionally measure a configuration of the ~~work~~ work piece.

Claim 180 (Currently Amended) The apparatus as claimed in claim 179, wherein a range of the ~~work~~ work piece to be tested by said testing optics is divided into a plurality of zones, said apparatus further comprising:

an in-zone moving mechanism for sequentially moving a relative position between said testing optics and the ~~work~~ work piece in a direction perpendicular to a direction of division of said range; and

a division-direction moving mechanism for sequentially moving the relative position in the direction of division of said range.

Claim 181 (Currently Amended) The apparatus as claimed in claim 180, wherein the ~~work~~ work piece is cylindrical

Claim 182 (Currently Amended) The apparatus as claimed in claim 180, wherein the ~~work~~ work piece is flat.

Claim 183 (Original) The apparatus as claimed in claim 180, wherein said light-sensitive device comprises a single or three or more line sensors.

Claim 184 (Original) The apparatus as claimed in claim 180, wherein said camera comprises an area sensor camera, and

calculation particular to a phase shifting method is applied to data output from a single or three or more rows of said area sensor camera for thereby measuring the surface configuration.

Claim 185 (Original) The apparatus as claimed in claim 180, wherein said lattice pattern comprises a liquid crystal device.

Claim 186 (Currently Amended) The apparatus as claimed in claim 179, wherein the ~~work~~ work piece is cylindrical

Claim 187 (Currently Amended) The apparatus as claimed in claim 179, wherein the ~~work~~ work piece is flat.

Claim 188 (Original) The apparatus as claimed in claim 179, wherein said light-sensitive device comprises a single or three or more line sensors.

Claim 189 (Original) The apparatus as claimed in claim 179, wherein said camera comprises an area sensor camera, and

calculation particular to a phase shifting method is applied to data output from a single or three or more rows of said area sensor camera for thereby measuring the surface configuration.

Claim 190 (Original) The apparatus as claimed in claim 179, wherein said lattice pattern comprises a liquid crystal device.